

Solutions

DATE : (20th – 26th Oct)

1) Answer: (d) – It marked the **first Indian armed rebellion led by a woman** against British colonial rule.

Explanation

Context

- The **Kittur Revolt (1824)**, led by **Rani Chennamma of Kittur**, is regarded as one of the **earliest instances of resistance** to the British East India Company's imperial policies.
- It predated the Revolt of 1857 and demonstrated **female-led defiance** against colonial interference.

Key Aspects

- **Policy Background:** Stemmed from the **British policy of non-recognition of adopted heirs**, undermining indigenous sovereignty.
- **Implementation:** Rani Chennamma **organized armed forces** and resisted British occupation after her adopted son's claim to the throne was rejected.
- **Outcome:** Despite early victories, the revolt was **suppressed**, and Rani Chennamma was **imprisoned till death**.

Significance

- **Historical:** The **first Indian armed rebellion led by a woman**, marking an **early assertion of independence**.
- **Symbolism:** A precursor to the Revolt of 1857, inspiring future female leaders like **Rani Lakshmibai**.
- **Contemporary Relevance:** Symbol of **women's empowerment** and **patriotism**.

Analysis of Options

- ✓ **(d) Correct:** It marked the first Indian armed rebellion led by a woman.
- ✗ **(a):** Not related to the decline of Maratha power.
- ✗ **(b):** Not a peasant revolt or about land reforms.
- ✗ **(c):** Not against the Mughal Empire.

Conclusion

➡ The **Kittur Revolt (1824)** stands as a **pioneering moment** in India's freedom struggle — a **symbol of courage, resistance, and women's leadership** against British imperialism.

2) Answer: (d) – Articles **25** and **21** of the Constitution safeguard the **freedom of religion** and the **right to privacy**, respectively.

Context

- The **Supreme Court of India** has linked the **right to privacy** with **freedom of religion**, ensuring that **individual choice of faith** is part of one's **private conscience and autonomy**.

Constitutional Basis

- **Article 25:** Guarantees **freedom of conscience** and the right to freely profess, practice, and propagate religion.
- **Article 21:** Ensures the **right to life and personal liberty**, which includes **privacy** and **autonomy**.

Judicial Development

- **K.S. Puttaswamy v. Union of India (2017):** Recognized **privacy as a fundamental right** under Article 21.
- **Shafin Jahan v. Asokan (2018):** Affirmed that **choice of faith and marriage** lies within the domain of **individual liberty and privacy**.

Contemporary Relevance

- Protects individuals from **forced disclosures** or **coercion in religious conversions**.
- Provides **constitutional protection** against intrusive state or societal control over personal faith.
- Strengthens **secularism** and **constitutional morality**, as emphasized by **Dr. B.R. Ambedkar**.

Analysis of Options

- ✓ **(d) Correct:** Articles **25 & 21** protect religious freedom and privacy.
- ✗ **(a):** Articles 17 & 23 relate to untouchability and forced labour.
- ✗ **(b):** Articles 19 & 32 concern freedoms and remedies, not religion-privacy link.
- ✗ **(c):** Articles 14 & 19 deal with equality and freedoms, not this intersection.

Conclusion

➡ The **right to privacy** as part of **religious freedom** strengthens **individual autonomy** and **constitutional liberty**, reaffirming India's commitment to **secular democracy**.

3) Answer: (a) – The **Securities and Exchange Board of India (SEBI)** is the statutory regulator for **Alternate Investment Funds (AIFs)**.

Explanation

Context

- **Alternate Investment Funds (AIFs)** are privately pooled investment vehicles used to invest in **venture capital, private equity, and debt instruments**.
- They play a crucial role in financing sectors not adequately covered by traditional banks.

Regulatory Framework

- Regulated under the **SEBI (AIF) Regulations, 2012**.
- **SEBI** ensures:
 - **Registration and classification** of AIFs (Category I, II, III).
 - **Investor protection**, transparency, and accountability.
- **RBI** issues norms for banks/NBFCs investing in AIFs but is **not the regulator**.

Example

- **SWAMIH Fund:** A government-backed AIF providing **priority debt funding** to **stalled housing projects**, especially in **affordable housing**.

Significance

- Enhances **financial inclusion** and **economic diversification**.
- Boosts sectors like **real estate and startups** through **private capital inflows**.

Analysis of Options

- ✓ (a) **Correct:** SEBI regulates AIFs.
- ✗ (b): SBI is a commercial bank, not a regulator.
- ✗ (c): NHB regulates housing finance, not AIFs.
- ✗ (d): RBI gives investment norms but doesn't regulate AIFs.

Conclusion

➔ SEBI's oversight ensures **transparency, governance, and investor confidence**, strengthening India's **alternative investment ecosystem**.

4) Answer: (c) – Both Statement I and Statement II are correct.

Explanation

Context

- The Government of India is leveraging **blockchain technology** to ensure **transparency, security, and trust** in governance.
- The **National Blockchain Framework (NBF) 2024** provides a blueprint for **integrating blockchain across government departments**.

Key Aspects

- **Core Components:**
 - **Vishvasya Blockchain Stack:** The foundational architecture for decentralized applications.

- **Praamaanik:** Verification and authentication system for digital documents.

- **Implementation:**

- Ensures **tamper-proof property records**, reducing corruption and litigation.
- Facilitates **secure certification** in education, judiciary, and logistics.

Broader Impact

- **Transparency:** Immutable recordkeeping fosters citizen trust.
- **Governance Efficiency:** Reduces delays and human intervention.
- **Corruption Control:** Deters manipulation of official data.

Analysis of Statements

- ✓ **Statement I – Correct:** Vishvasya Blockchain Stack and Praamaanik are core components of NBF 2024.
- ✓ **Statement II – Correct:** Blockchain ensures transparent, dispute-free property transactions.

Conclusion

➔ The **National Blockchain Framework 2024** exemplifies India's transition toward **trust-based digital governance**, ensuring **transparency and accountability** in public systems.

5) Answer: (a) – All three statements (I, II, and III) are correct.

Explanation

Context

- **Multilateralism** and **minilateralism** are central concepts in global governance and diplomacy.
- As multilateral bodies face **delays and gridlocks**, countries increasingly rely on **smaller, issue-specific alliances** (minilateralism).

Concepts

- **Multilateralism:** Cooperation among **three or more states** to address common global issues (e.g., UN, WTO, WHO).
- **Minilateralism:** Small, focused groups formed for **strategic cooperation** and **faster decision-making** (e.g., QUAD, I2U2).

Current Global Trends

- The **U.S. withdrawal from UNESCO (2017)** and **UNHRC (2018)** demonstrates declining faith in traditional multilateralism.
- The **rise of regional and thematic alliances** reflects growing emphasis on **flexibility and shared interests**.
- Calls for **UNSC reform** and **WTO dispute mechanism revival** continue.

Analysis of Statements

- ✓ (I): **Correct** – Decision delays in multilateralism have led to unilateral approaches.
- ✓ (II): **Correct** – The U.S. has withdrawn from both the UNHRC and UNESCO.
- ✓ (III): **Correct** – Multilateralism involves cooperation among 3+ states for shared goals.

Conclusion

➔ The global order is witnessing a **shift from multilateralism to unilateralism**, emphasizing **strategic agility** over universal consensus — a trend India navigates through **balanced diplomacy and reform advocacy**.

6) Answer: (b) – Statements II and III only are correct.

Explanation

Context

- **Domestic workers** constitute a major part of India's **informal sector**, largely composed of **women and marginalized communities**.
- Despite their socio-economic contribution, they lack **comprehensive national legal protection**, leaving them vulnerable to **exploitation and abuse**.

Key Legal Framework

- **Absence of a Central Law:** There is **no dedicated central legislation** exclusively governing the rights of domestic workers.
- **Existing Protective Mechanisms:**
 - **POSH Act (2013):** Provides protection from **sexual harassment** and ensures **safe workplaces**, including households.
 - **Bharatiya Nyaya Sanhita (BNS) Act, 2023:** Introduces **legal remedies and complaint mechanisms** for abuse and harassment.
 - **Minimum Wages Act:** Applies **only when states notify** domestic work as a scheduled employment.
 - **State Welfare Boards:** Some states like **Tamil Nadu, Karnataka, and Kerala** have framed **welfare schemes and boards**.

Judicial Context

- The **Supreme Court of India** has directed the government to **formulate a comprehensive law** to ensure fair wages, social security, and dignity for domestic workers.
- Present protection remains **fragmented and unevenly enforced**.

Contemporary Relevance

- Domestic workers face **low wages, unsafe conditions, and no social security**.

- **ILO Convention 189 (2011)** on decent work for domestic workers, though not ratified by India, serves as a guiding standard.

Analysis of Statements

- ✗ **Statement I – Incorrect:** Labour codes largely **exclude domestic workers** from their purview.
- ✓ **Statement II – Correct:** The **POSH Act** ensures **safe and abuse-free workplaces** for domestic workers.
- ✓ **Statement III – Correct:** The **BNS Act** provides **legal remedies and complaint mechanisms** for exploitation or abuse.
- ✗ **Statement IV – Incorrect:** The **Minimum Wages Act** covers domestic workers **only when notified by states**; not universal.

Conclusion

➔ The **legal framework for domestic workers** in India remains **partial and inconsistent**, relying on **piecemeal protections** from various laws rather than a comprehensive act. Thus, **only Statements II and III are correct**.

7) Answer: (d) – Statements II and III only are correct.

Explanation

Context

- The **Northeast Frontier Railway (NFR)** operates through regions of **rich biodiversity**, where **train–elephant collisions** have been a serious concern.
- The **Intrusion Detection System (IDS)** represents an innovative **technological intervention** to prevent such accidents.

Key Features of IDS

- **Technology Used:** Employs **optical fibre sensing** to detect vibrations caused by **elephant movements** on or near railway tracks.
- **Functionality:**
 - Detects movement.
 - Sends **real-time alerts** to control rooms.
 - Enables **timely action** by railway staff to prevent collisions.
- **Scope:** Initially implemented in **Assam and North Bengal corridors**—major elephant movement zones.

Policy Context

- Developed as part of the **NFR's conservation and safety strategy**, aligning with the **Project Elephant and Wildlife Conservation initiatives**.

Benefits

- Reduces **human–elephant conflict**.
- Enhances **railway safety** and **biodiversity protection**.
- Supports India's commitment to **sustainable development and wildlife conservation**.

Analysis of Statements

- ✗ **Statement I – Incorrect:** IDS is not for **earthquake monitoring**; it detects **elephant movement**.
- ✓ **Statement II – Correct:** IDS uses **optical fibre sensing** to detect **vibrations** from elephant movements.
- ✓ **Statement III – Correct:** System sends **real-time alerts** for **immediate railway response**.

Conclusion

➡ The **IDS** exemplifies a **technology-driven conservation measure**, balancing **railway operations** with **ecological preservation**. Hence, **Statements II and III only** are correct.

8) Answer: (a) – Statements I and III only are correct.

Explanation

Context

- An **execution petition** is a legal step taken by the **decree-holder** (winning party) to ensure **enforcement of a court decree** when the **losing party defaults**.
- Efficient execution is vital for **judicial credibility** and **rule of law**.

Legal Background

- **Execution proceedings** are governed by the **Civil Procedure Code (CPC), 1908**, ensuring that judgments are implemented effectively.
- The **Supreme Court** has issued **guidelines mandating completion within six months** to prevent undue delay.

Contemporary Relevance

- **Pendency of execution petitions** remains a serious problem in lower courts, undermining the **efficacy of judicial redress**.
- **Judicial reforms** focus on improving the speed and transparency of decree implementation.

Analysis of Statements

- ✓ **Statement I – Correct:** Execution petitions **enforce court decrees** when the judgment-debtor fails to comply.
- ✗ **Statement II – Incorrect:** Execution petitions are **not confined to criminal cases** or the **Supreme Court**; they are part of **civil proceedings**.
- ✓ **Statement III – Correct:** The **Supreme Court** has directed **six-month deadlines** for execution.

Conclusion

➡ **Execution petitions** form the **operational backbone** of judicial enforcement. Their timely disposal is key to ensuring **public faith** in justice. Thus, **Statements I and III only** are correct.

9) Answer: (a) – Statements II and III only are correct.

Explanation

Context

- **Anti-Submarine Warfare Shallow Water Craft (ASW SWC)** such as **INS Mahe** are vital components of India's **coastal defense** and **maritime strategy**.
- They enhance **surveillance, patrol, and underwater warfare** capabilities in littoral zones.

Key Features

- **Built by:** **Cochin Shipyard Limited (CSL), Kochi**.
- **Named after:** The **historic port town of Mahe** in **Puducherry**.
- **Purpose:** Conduct **anti-submarine operations, coastal patrolling, and mine detection** in shallow waters.

Policy Framework

- Part of the **Indian Navy's modernization** under **Aatmanirbhar Bharat** and the **Make in India** initiative.
- Enhances **indigenous shipbuilding** and **maritime self-reliance**.

Strategic Importance

- Strengthens India's **maritime surveillance** capability.
- Protects **coastal installations** and **trade routes** from underwater threats.
- Reinforces India's **blue-water aspirations** through indigenous defense production.

Analysis of Statements

- ✗ **Statement I – Incorrect:** *Mahe* is **not designed for open-ocean combat** or deep-sea mining; it operates in **shallow coastal waters**.
- ✓ **Statement II – Correct:** *Mahe* is **named after** a port town in **Puducherry**.
- ✓ **Statement III – Correct:** *Mahe* is **constructed by Cochin Shipyard Limited, Kochi**.

Conclusion

➡ The **ASW SWC 'Mahe'** represents India's **technological and defense manufacturing progress**, strengthening **coastal maritime security**. Hence, **Statements II and III only** are correct.

10) Answer: (c) – Statements I and III only are correct.

Explanation

Context

- **HIV, syphilis, and hepatitis B** are major **infectious diseases** with significant global and national public health relevance.

- Understanding their **pathogens** and **transmission routes** is key to designing **preventive strategies**, especially for **maternal and child health**.

Scientific Basis

- HIV (Human Immunodeficiency Virus):** A virus that weakens the immune system, leading to **AIDS** in advanced stages.
- Syphilis:** A **bacterial infection** caused by *Treponema pallidum*.
- Hepatitis B:** A **viral infection** that targets the **liver**, potentially causing chronic disease.

Mother-to-Child Transmission (MTCT)

- HIV and Hepatitis B** can be **transmitted from mother to child** during pregnancy, childbirth, or breastfeeding.
- Syphilis** can also cross the placenta, leading to **congenital syphilis**, a major cause of infant morbidity.

Health Policy Framework

- National AIDS Control Programme (NACP)** and **National Viral Hepatitis Control Programme (NVHCP)** focus on **screening, treatment, and prevention**.
- WHO PMTCT initiatives** aim to **eliminate vertical transmission** through testing, therapy, and immunization.

Analysis of Statements

- ✔ **Statement I – Correct:** *Syphilis* is caused by the **bacterium *Treponema pallidum***.
- ✘ **Statement II – Incorrect:** *HIV* and *Hepatitis B* can indeed be **transmitted from mother to child**.
- ✔ **Statement III – Correct:** *HIV* is a **virus** that causes **AIDS** in its advanced stage.

Conclusion

- ➡ The differentiation between **bacterial and viral infections** is essential for public health strategy. Thus, **Statements I and III only** are correct.

11) Answer: (c) – “One Caste, One Religion, One God for all human beings.”

Explanation

Context

- Sree Narayana Guru (1856–1928)** was a **spiritual leader, philosopher, and social reformer** from Kerala whose teachings transformed the **anti-caste reform movement** in southern India.
- His reforms aimed to **eradicate social inequalities** and promote **spiritual unity and moral awakening**.

Key Aspects

- Policy Background:** Guru’s principle, “*One Caste, One Religion, One God for all human beings*,” sought to **transcend caste and religious divisions**, promoting **universal brotherhood and equality**.
- Implementation:**
 - Established the **Aruvippuram Shiva Temple (1888)** for lower-caste worshippers — a symbolic act of social defiance.
 - Founded **Sree Narayana Dharma Paripalana (SNDP) Yogam**, promoting **education, reform, and community organization**.
- Broader Impact:**
 - Inspired **Vaikom Satyagraha (1924–25)** and later **temple entry movements**.
 - Paved the way for Kerala’s **progressive social structure and humanistic values**.

Contemporary Relevance

- His message continues to influence India’s **secularism, social justice, and anti-discrimination** frameworks.
- His teachings align with constitutional principles of **equality (Article 14)** and **dignity (Article 21)**.

Analysis of Options

- ✘ **(a):** Focused on economic equality, not his central doctrine.
- ✘ **(b):** Service to humankind was valued but not his defining principle.
- ✔ **(c):** Correct – This embodies **Sree Narayana Guru’s main philosophy** of spiritual and social equality.
- ✘ **(d):** *Satyagraha* is linked with **Mahatma Gandhi**, not Sree Narayana Guru.

Conclusion

- ➡ Sree Narayana Guru’s universal message of **oneness and equality** transcended caste, creed, and religion, making him a **pioneer of social reform and spiritual humanism** in modern India.

12) Answer: (a) – Silver iodide is the primary chemical agent used in **artificial rainfall (cloud seeding)** in India.

Explanation

Context

- Cloud seeding** is a weather modification technique aimed at **inducing artificial rainfall** by dispersing chemical agents into clouds.
- In India, it is explored as a **pollution control measure** and **drought management strategy**.

Key Features

- Mechanism:**
 - Silver iodide or potassium iodide acts as a **nucleating agent**, attracting water vapor to form raindrops.

- Requires **suitable cloud conditions** with sufficient moisture.
- Implementation in India:**
 - Conducted by institutions like **IIT Kanpur** and **Indian Meteorological Department (IMD)**.
 - Deployed in **Delhi, Maharashtra, and Karnataka** during high pollution or drought phases.

Policy Context

- Recognized under **urban air quality management** and **water resource augmentation**.
- Supported under India's **National Clean Air Programme (NCAP)** and **State Pollution Control Boards**.

Environmental Concerns

- Silver accumulation** in soil and water ecosystems.
- Limited scientific consensus** on long-term effects and success rates.

Analysis of Options

- ✓ (a) **Correct:** Silver iodide is the **most widely used** cloud seeding agent.
- ✗ (b): Ferric oxide has no role in cloud seeding.
- ✗ (c): Sodium chloride is used occasionally, not primarily.
- ✗ (d): Calcium carbonate is not a seeding agent.

Conclusion

- ➔ **Silver iodide** remains the **standard and effective catalyst** for cloud seeding in India, supporting **pollution mitigation and rainfall enhancement efforts**.

13) Answer: (c) – Exercise Ocean Sky is a multinational air exercise hosted by the Spanish Air Force.

Explanation

Context

- Exercise Ocean Sky** is a major **multinational air combat exercise** conducted by the **Spanish Air Force (Ejército del Aire y del Espacio)**.
- It focuses on **air defense operations, interoperability, and tactical training** among participating nations.

Key Aspects

- India's Participation (2025):** The **Indian Air Force (IAF)** joined for the first time, marking India as the **first non-NATO nation** to participate.
- Objective:** Enhance **combat readiness, operational cooperation, and strategic partnerships**.
- Location:** Conducted over the **Canary Islands**, with multiple NATO and partner air forces.

Strategic Significance

- Promotes **India-Spain defense diplomacy** and broader **global interoperability**.
- Supports India's **Act East** and **defense modernization** strategies.
- Builds experience for **joint missions** and **multinational operations**.

Analysis of Options

- ✗ (a): Not an anti-submarine warfare exercise.
- ✗ (b): Not related to maritime surveillance.
- ✓ (c): Correct – A **multinational air exercise hosted by Spain**.
- ✗ (d): Not a bilateral naval exercise.

Conclusion

- ➔ **Exercise Ocean Sky** reinforces India's **defense diplomacy**, enhancing **strategic visibility** and **operational interoperability** within global air combat frameworks.

14) Answer: (d) – Carabid beetles are nocturnal predators, serving as bioindicators of soil microplastic pollution.

Explanation

Context

- Carabid beetles (Family Carabidae)** are **ground-dwelling insects** widely used as **bioindicators** due to their **sensitivity to environmental changes**.
- Their response to **soil contamination** makes them crucial for **microplastic impact studies**.

Key Features

- Ecological Role:**
 - Act as **predators of pests** and **scavengers** in soil ecosystems.
 - Nocturnal habits make them highly responsive to micro-level ecological variations.
- Indicator Relevance:**
 - Presence, diversity, and physiological changes reflect **microplastic contamination levels**.
 - Useful in **monitoring soil health** and **ecosystem resilience**.

Broader Impact

- Aid in developing **eco-toxicological models** for **plastic contamination**.
- Contribute to **environmental policy** and **sustainable land management**.

Analysis of Options

- ✗ (a): Not arboreal pollinators.
- ✗ (b): Not aquatic herbivores.
- ✗ (c): Not diurnal scavengers.
- ✓ (d): Correct – **Nocturnal predators** that serve as **bioindicators** of soil pollution.

Conclusion

➔ **Carabid beetles** represent a key tool in assessing **terrestrial microplastic pollution**, linking **biodiversity studies** with **environmental monitoring**.

15) Answer: (a) – Statements I and III only are correct.

Explanation

Context

- The **Telecommunication Rules (Amendment), 2024** introduced stronger mechanisms for **fraud prevention, identity verification, and telecom data protection** amid rising cybercrime.

Key Features

- **Mobile Number Verification (MNV) System:**
 - A centralized framework to **verify phone number ownership** for authenticity and fraud control.
- **Telecommunication Identifier User Entities (TIUEs):**
 - Include **digital platforms and businesses** (e.g., Zomato, Paytm, Uber) using phone numbers for customer interaction.
 - **Exclude licensed telecom operators** like Airtel or Jio.
- **IMEI Database Regulation:**
 - Manufacturers must maintain **records of tampered or restricted IMEIs** to curb misuse of stolen phones.

Policy Objectives

- Enhance **consumer trust**, prevent **digital identity theft**, and promote **safe communication ecosystems**.
- Align with the **Digital India mission** and **Cybersecurity frameworks**.

Analysis of Statements

✔ **Statement I – Correct:** The **MNV system** verifies user phone numbers to curb digital fraud.

✘ **Statement II – Incorrect:** **TIUEs exclude telecom operators**; they refer to digital platforms using telecom identifiers.

✔ **Statement III – Correct:** The amendment regulates **telecom equipment and IMEI database maintenance**.

Conclusion

➔ The **Telecommunication Rules (Amendment), 2024** enhance **digital security and user verification**, balancing innovation with **data protection**. Thus, **Statements I and III only** are correct.

16) Answer: (a) – Statements I and III only are correct.

Explanation

Context

- **Cross-border payments** are transactions where payer and payee are in **different jurisdictions**; they are vital for **remittances, trade, and services**.
- India is a major **remittance recipient** and global initiatives (G20, BIS) aim to improve cost, speed, and transparency.

Key Points

- **Statement I — Correct.**
 - **India** was projected to be the **top global remittance recipient** for 2024 with estimates around **\$137.7 billion** (source: global remittance forecasts).
 - **Implication:** Large outward diaspora flows make remittances macro-significant for India's external receipts and household incomes.
- **Statement II — Incorrect.**
 - **Retail cross-border payments** refer to person-to-person, person-to-business, and business-to-person flows — **not exclusive to financial institutions**. They involve banks, PSPs, wallets, and non-bank payment platforms.
- **Statement III — Correct.**
 - The **G20 Roadmap on Enhancing Cross-Border Payments** (supported by BIS/IMF) directly addresses **high costs, poor transparency, and long settlement times**, recommending technical, regulatory and governance measures.

Challenges & Policy Relevance

- **Key issues:** Cost, speed, transparency, FX liquidity, AML/CFT compliance.
- **India's responses:** UPI internationalisation pilots, corridors with faster settlement rails, and regulatory inputs to G20/BIS discussions.

Conclusion

➔ Given India's remittance prominence and the G20/BIS focus on payments reform, **Statements I and III only** are correct.

Keywords: *Remittances, G20 Roadmap, Retail cross-border payments, Transparency.*

17) Answer: (c) – Only Statement III is correct.

Explanation

Context

- Appointment of the **Chief Justice of India (CJI)** and Supreme Court judges engages **Article 124(2)** and the **Collegium** convention born from the **Three Judges Cases**. The **NJAC** episode remains a key development in appointment jurisprudence.

Key Points

- **Statement I — Incorrect.**
 - The NJAC (National Judicial Appointments Commission) (Constitutional Amendment + Act) was **struck down by the Supreme Court** (2015) in the **Fourth Judges Case**, not upheld.
- **Statement II — Incorrect.**
 - The **Collegium** that recommends appointments to the President consists of the **CJI + four senior-most Supreme Court judges** (for appointments of SC judges), not **CJI + three**.
- **Statement III — Correct.**
 - **Article 124(2)** vests the **President** with power to appoint Supreme Court judges — practically exercised on **Collegium recommendations**, but constitutionally the appointment is by the **President**.

Constitutional & Institutional Implications

- **Independence vs. Accountability:** Collegium protects judicial independence, but raises **transparency concerns**.
- **Memorandum of Procedure (MoP):** Evolved to formalize interactions between judiciary and executive in appointments.

Conclusion

➡ **Only Statement III** (appointment by the President under Article 124(2)) is correct; Statements I and II are incorrect.

18) Answer: (b) – Statements I and II only are correct.

Explanation

Context

- This item examines factual assertions about **Sree Narayana Guru** — his organisational role and birthplace — and his association with the **Vaikom Satyagraha**.

Key Points

- **Statement I — Correct.**
 - **Sree Narayana Dharma Paripalana (SNDP) Yogam** was instrumental in organizing social reform among Ezhavas; **Dr. P. Palpu** (a physician and social activist) collaborated with and supported SNDP initiatives. Historical records show **collaboration with local leaders** including Palpu for community uplift.
- **Statement II — Correct.**
 - **Birthplace:** Sree Narayana Guru was born in **Chempazhanthy** near **Thiruvananthapuram (Trivandrum)** — a well-established biographical fact.
- **Statement III — Incorrect.**
 - **Vaikom Satyagraha (1924–25)** was a mass social movement for **temple entry and public**

access, supported by many reformers including supporters from Guru's followers; however, **Guru did not personally lead** the Satyagraha — leaders included **T.K. Madhavan, K. P. Kesava Menon, and others**, with SNDP providing social backing.

Significance

- Distinguishes between **direct leadership** and **moral/organizational support** in reform movements.
- Highlights Guru's role in **institution building (SNDP)** and **spiritual leadership**, which enabled wider reform actions.

Conclusion

➡ **Statements I and II are correct; Statement III is incorrect** because Guru supported but did not lead Vaikom Satyagraha.

19) Answer: (a) – Statements I, II, III and IV are all correct.

Explanation

Context

- The **Defence Acquisition Council (DAC)** is the apex body for **capital acquisitions** in India, crucial to military modernization and procurement governance.

Key Points

- **Statement I — Correct.**
 - **DAC monitors progress** of major defence projects; it periodically reviews timelines, cost overruns, capability gaps, and project status.
- **Statement II — Correct.**
 - **Acceptance of Necessity (AoN)** — a precondition in the procurement lifecycle — is **granted by the DAC** for capital acquisition proposals.
- **Statement III — Correct.**
 - DAC approves capital acquisitions that feed into the **Long Term Perspective Plan (LTPP)** and annual acquisition planning; it ensures coherence with strategic and capability requirements.
- **Statement IV — Correct.**
 - **Chairmanship:** The DAC is **chaired by the Union Defence Minister**, with members including Service Chiefs, Defence Secretary, and other key officials.

Institutional Role & Impact

- **Streamlines procurement** across Services, reduces inter-service friction, and supports **Atmanirbhar Bharat** through indigenisation.
- Ensures **oversight, strategic alignment**, and policy continuity in defence acquisitions.

Conclusion → All four statements accurately describe DAC's composition and functions; hence (a) I, II, III and IV is correct.

20) Answer: (c) – Statement-I is correct, but Statement-II is incorrect.

Explanation

Context

- This item revisits **cloud seeding** fundamentals — what it can and cannot do — with emphasis on the **requirement of pre-existing clouds** for successful weather modification.

Key Points

- Statement I — Correct.**
 - Cloud seeding** works by introducing **ice nuclei** (e.g., **silver iodide**) into **existing clouds**. These nuclei promote **ice crystal formation** which can grow and precipitate, augmenting rainfall/snowfall under favorable meteorological conditions.
- Statement II — Incorrect.**
 - Cloud seeding cannot generate clouds** where none exist. It **cannot create clouds from clear skies**; the technique only enhances precipitation potential of **already present cloud systems**. Hence the claim in Statement II is false.

Operational & Policy Considerations

- Prerequisites:** Suitable cloud type, humidity profile, and atmospheric dynamics are necessary.
- Limitations:** Variable efficacy, ethical/environmental concerns (chemical residues like silver), cost, and dependence on natural weather patterns.
- Use Cases:** Drought mitigation, reservoir recharge, and short-term pollution reduction via washout; implemented through **airborne** or **ground-based** dispersal.

Conclusion → Given cloud seeding's reliance on **pre-existing clouds**, **Statement I is correct** while **Statement II is incorrect**.

21) Answer: (d) – Information created or altered using computer resources to appear authentic.

Explanation

Context

- The proposed **amendments to the Information Technology (IT) Rules, 2021** introduce the concept of "**Synthetically Generated Information**", aiming to tackle the **rise of AI-generated content, deepfakes, and digital misinformation**.

- This marks a crucial step in updating India's **digital governance** to address **AI ethics, cybersecurity, and online safety**.

Key Features

- Definition:**
 - Refers to **digital content that is created, modified, or altered using computer resources**, including **AI models and algorithms**, in a way that **appears real or authentic**.
 - Covers **audio, video, images, or text** generated synthetically.
- Policy Development:**
 - Amended under the **IT Rules, 2021** framed by the **Ministry of Electronics and IT (MeitY)**.
 - Aims to regulate **synthetic media**, particularly **deepfakes** and **AI-generated misinformation**.
- Implementation:**
 - Imposes **responsibilities on social media intermediaries** to **label synthetically generated content**.
 - Platforms must use **AI-detection tools** and **user disclosures** to maintain content authenticity.
- Current Significance:**
 - Rising use of **AI tools** (e.g., **deepfake videos, AI voice cloning**) threatens **privacy, elections, and social harmony**.
 - Regulation seeks to balance **technological innovation** with **citizen safety and information integrity**.

Analysis of Options

- ✗ (a): Manual editing does not qualify; the definition requires **computer or algorithmic generation**.
- ✗ (b): Such content can be generated by **any entity**, not limited to government bodies.
- ✗ (c): Not about **user consent**; the focus is on **synthetic or AI-based origin**.
- ✓ (d): Correct – Matches the proposed legal definition: **information created or altered using computer resources to appear authentic**.

Conclusion

→ The definition of **synthetically generated information** strengthens India's **digital governance framework**, enabling detection and labeling of **AI-generated content** to protect users from **misinformation and identity misuse**.

22) Answer: (c) – Anagyrus lopezi.

Explanation

Context

- The **cassava mealybug** (*Phenacoccus manihoti*) is a major pest affecting **tapioca (cassava) cultivation**, threatening food security and livelihoods.

- India adopted **biological pest control** using the **parasitic wasp *Anagyrus lopezi***, a sustainable alternative to chemical pesticides.

Key Features

- Anagyrus lopezi:**
 - A **tiny parasitic wasp** that specifically **targets and parasitizes cassava mealybugs**, reducing their population naturally.
 - Introduced in **southern Indian states (Kerala, Tamil Nadu)**.
- Mechanism:**
 - The wasp lays eggs inside the mealybug, whose larvae consume and kill the pest — an example of **classical biological control**.

Policy Context

- Supported under **Integrated Pest Management (IPM)** frameworks by the **Indian Council of Agricultural Research (ICAR)** and **FAO** guidelines.
- Reduces dependency on **chemical pesticides**, supporting **sustainable agriculture** and **ecological balance**.

Advantages

- Environmentally safe**, cost-effective, and long-term pest suppression.
- Promotes **agroecological sustainability** and protects **farmer health**.

Analysis of Options

- ✗ (a): Incorrect – Not used for rice pests.
- ✗ (b): Incorrect – Not linked with cassava pest control.
- ✓ (c): Correct – *Anagyrus lopezi* is the **parasitoid used to control cassava mealybug**.
- ✗ (d): Incorrect – Used against different pests (e.g., cabbage white butterfly).

Conclusion ➡ The use of **Anagyrus lopezi** in cassava cultivation exemplifies India's **eco-friendly pest management approach**, ensuring **sustainability, biodiversity conservation, and agricultural resilience**.

23) Answer: (d) – Study of molecular structures and drug discovery.

Explanation

Context

- The **Quantum Echoes algorithm** represents a significant leap in **quantum computing**, demonstrating a **verifiable quantum advantage** using **Google's Willow quantum chip**.
- It highlights how quantum systems can outperform classical supercomputers in **complex molecular and material simulations**.

Key Features

- Core Concept:**
 - The algorithm utilizes **quantum "echoes"** to **analyze and reverse quantum states**, allowing precise simulation of atomic interactions.
- Performance:**
 - Achieved computations **13,000× faster** than top classical supercomputers.
 - Enables **reproducible results**, enhancing trust in **quantum verifiability**.

Applications

- Molecular Modeling:** Predicts **chemical bonding and reactions** at quantum levels.
- Drug Discovery:** Accelerates analysis of **biomolecular interactions** and **drug-target binding**.
- Material Science:** Facilitates design of **new compounds and superconductors**.

Policy & Scientific Relevance

- Supports **India's National Quantum Mission (2023–2031)** and global quantum R&D initiatives.
- Demonstrates how **quantum algorithms** can solve previously intractable scientific problems.

Analysis of Options

- ✗ (a): Not related to content moderation.
- ✗ (b): Not for image processing.
- ✗ (c): Not related to agriculture.
- ✓ (d): Correct – Primary use is **molecular structure analysis and drug discovery**.

Conclusion ➡ The **Quantum Echoes algorithm** showcases the potential of **quantum computing** to revolutionize **pharmaceutical research and molecular chemistry**, marking a new era of scientific computing.

24) Answer: (c) – Guru Gobind Singh.

Explanation

Context

- The **Jore Sahib** are the **revered sandals of Guru Gobind Singh**, the **tenth Sikh Guru**, symbolizing deep reverence within Sikh heritage.
- Their journey across India through the **Guru Charan Yatra** highlights the enduring respect for Sikh relics and their role in uniting communities.

Key Aspects

- Guru Gobind Singh Ji (1666–1708):**
 - The tenth Sikh Guru, known for founding the **Khalsa** in 1699 and championing **equality, valor, and devotion**.
- Jore Sahib:**
 - Sacred sandals associated with **Guru Gobind Singh** and **Mata Sahib Kaur Ji**.

- Carried from **Delhi to Patna Sahib**, a key Sikh pilgrimage site and Guru's birthplace.

Cultural Significance

- Represents **devotion, humility, and faith** in Sikhism.
- Promotes **religious unity, heritage awareness, and pilgrimage tourism**.
- Reinforces the message of **Guru Gobind Singh's spiritual legacy**.

Analysis of Options

- ✗ (a): Guru Tegh Bahadur not associated with Jore Sahib.
- ✗ (b): Guru Arjan Dev not linked.
- ✓ (c): Correct – Belong to **Guru Gobind Singh Ji**.
- ✗ (d): Not connected with Guru Nanak.

Conclusion → The **Jore Sahib** symbolize the **spiritual humility and legacy** of **Guru Gobind Singh Ji**, central to Sikh devotion and cultural continuity.

25) Answer: (b) – Registration and monthly production/stock return submission.

Explanation

Context

- The **Vegetable Oil Products, Production and Availability (Regulation) Order, 2011 (VOPPA Order)** governs India's **edible oil sector**, vital for **food security and price stability**.
- Recent **amendments (2024)** strengthen regulatory mechanisms for **traceability, transparency, and market accountability**.

Key Features

- New Mandates:**
 - Registration:** All stakeholders in the edible oil processing chain (manufacturers, refiners, importers, etc.) must register with the designated authority.
 - Monthly Returns:** Mandatory **submission of production and stock data** to the government.
- Objective:**
 - To monitor **supply chains**, prevent **hoarding and black marketing**, and ensure **price stabilization**.

Implementation Context

- Overseen by the **Department of Food and Public Distribution**, under the **Ministry of Consumer Affairs**.
- India's large import dependence (≈60% of total consumption) necessitates **supply transparency** for policy response.

Current Relevance

- Enhances **consumer protection**, prevents **market manipulation**, and improves **policy planning**.

- Aids in addressing **price volatility** due to global supply disruptions (e.g., Ukraine conflict, El Niño).

Analysis of Options

- ✗ (a): No mention of export quotas.
- ✓ (b): Correct – Registration and monthly production/stock returns are mandated.
- ✗ (c): Certification by FSSAI is not under this order.
- ✗ (d): No provision for exclusive domestic oilseed use.

Conclusion

→ The amendment ensures **traceability and transparency** across India's edible oil sector, improving **food security and consumer welfare**.

26) Answer: (c) – Both I and II are correct.

Explanation

Context

- The **International Convention for the Suppression of the Financing of Terrorism (ICSFT)** is one of the **key international treaties** forming the backbone of the **global counter-terrorism framework** under the **United Nations**.
- It targets the **financial lifelines of terrorist organizations**, aligning global legal systems toward preventing and punishing acts that finance terrorism.

Key Aspects

- Adoption and Legal Framework:**
 - Adopted by the **UN General Assembly on 9 December 1999**, and came into force in **April 2002**.
 - Forms part of the **UN's 19 global counter-terrorism conventions**.
 - India **signed in 2000** and **ratified in 2010**; **Iran** is also a ratifying state.
- Objective:**
 - To **criminalize the act of financing terrorism**, regardless of whether a terrorist act has been committed.
 - To ensure **extradition, prosecution, and international cooperation** among States Parties.
- Implementation Mechanism:**
 - States must **enact domestic laws** to prohibit and penalize terrorist financing.
 - Aligns national frameworks with **Financial Action Task Force (FATF)** recommendations.

Current Relevance

- Plays a crucial role in global compliance efforts, particularly for **FATF evaluations** and **anti-money laundering frameworks**.
- Supports international cooperation for **asset freezing, intelligence sharing, and terrorist financing surveillance**.

Analysis of Statements

✔ **Statement (I): Correct** – Adopted by the **UN General Assembly in 1999**.

✔ **Statement (II): Correct** – **Both India and Iran** have **ratified** the Convention, signaling global cooperation against terrorist financing.

Conclusion ➡ The **ICSFT (1999)** represents a cornerstone in international counter-terrorism law, binding nations to **cut off terror funding sources** and strengthen global **financial transparency**.

27) Answer: (d) – Statements I and II only are correct.

Explanation

Context

- **Tapioca (Cassava)** is a major tropical tuber crop cultivated primarily in **southern India** for **food, industrial starch, and biofuel** purposes.
- It has both **economic and food security** relevance, particularly in **Kerala and Tamil Nadu**.

Key Aspects

- **Agronomic Nature:**
 - A **tropical tuber crop** known for its **resilience in semi-humid climates**.
 - Grown extensively in **Kerala, Tamil Nadu, Andhra Pradesh, and Karnataka**.
- **Agro-Climatic Requirements:**
 - Prefers **red lateritic loam soils** with **moderate to high rainfall (100–150 cm)**.
 - Does **not require black soil or 200 cm rainfall**, as mentioned incorrectly in the third statement.
- **Economic Importance:**
 - Major source for **starch, sago, and industrial processing**.
 - Contributes to **rural income and employment generation**.

Analysis of Statements

✔ **Statement (I): Correct** – Tapioca (Cassava) is indeed a **tropical tuber crop**.

✔ **Statement (II): Correct** – **Kerala and Tamil Nadu** account for **≈80%** of India's tapioca acreage.

✘ **Statement (III): Incorrect** – Tapioca thrives in **well-drained red loam soils** with rainfall above 100 cm, **not 200 cm or black soil**.

Conclusion ➡ **Kerala and Tamil Nadu** dominate tapioca cultivation in India, highlighting their **agro-industrial contribution**. Statements I and II are correct.

28) Answer: (c) – I, II and III are correct.

Explanation

Context

- The **Sevilla Forum on Debt (2025)** represents a **multilateral effort** to address the **rising global debt crisis**, especially in developing economies.
- It emerged as part of the **Sevilla Platform for Action**, under the **UNCTAD16 framework**, symbolizing a new era of coordinated **debt sustainability efforts**.

Key Aspects

- **Policy Background:**
 - Initiated under **Spain's leadership**, supported by **UNCTAD and UN DESA**.
 - Coincides with the **Fourth International Conference on Financing for Development**.
- **Main Outcomes:**
 - **Sevilla Commitment (2025)** – The **first intergovernmental framework since 2015** focusing on **debt-for-development mechanisms**.
 - Establishment of the **Debt Swaps for Development Hub** and the **Sevilla Platform for Action**.
- **Contextual Importance:**
 - Addresses global **public debt exceeding \$100 trillion**.
 - Promotes **innovative finance, debt swaps, and SDG-aligned lending frameworks**.

Analysis of Statements

✔ **Statement (I): Correct** – The **Sevilla Forum** was launched during **UNCTAD16**, tackling developing world debt.

✔ **Statement (II): Correct** – The **Sevilla Commitment** is the **first global debt framework since 2015**.

✔ **Statement (III): Correct** – The forum is **led by Spain** with **UNCTAD and UN DESA** support.

Conclusion ➡ The **Sevilla Forum on Debt** signifies a global consensus for **inclusive debt governance**, integrating financial sustainability with **developmental equity**.

29) Answer: (d) – Statement I is incorrect, but Statement II is correct.

Explanation

Context

- **Methane (CH₄)** is a **potent greenhouse gas** with **84×** the **global warming potential (GWP)** of carbon dioxide (CO₂) over a 20-year period.
- Its management is central to **climate mitigation strategies** like the **Global Methane Pledge (GMP)**.

Key Aspects

- **Scientific Context:**
 - **CO₂** remains the **most abundant anthropogenic GHG**; **methane** is **second** but far more **heat-trapping per molecule**.
 - Methane accounts for about **30–35%** of **current global warming**.
- **Sources:**
 - **Natural:** Wetlands, permafrost.

- **Anthropogenic:** Agriculture (livestock, rice), fossil fuels (coal, oil, gas), and waste.
- **International Response:**
 - UNEP's **International Methane Emissions Observatory (IMEO)** monitors global emissions.
 - Over **150 countries** joined the **Global Methane Pledge (2021)** to reduce emissions by **30% by 2030**.

Analysis of Statements

✗ **Statement I: Incorrect** – CO₂, not methane, is the **most abundant GHG** in the atmosphere.

✓ **Statement II: Correct** – **Methane is highly potent and mostly anthropogenic** in origin, with emissions linked to human activity.

Conclusion → **Statement I is incorrect, Statement II is correct.** Methane is a **critical short-lived climate pollutant**, and reducing it can yield **immediate climate benefits**.

30) Answer: (c) – Statement I is correct, but Statement II is incorrect.

Explanation

Context

- The **Global Forest Resources Assessment (GFRA) 2025**, under the **Global Forest Observations Initiative (GFOI)**, provides detailed data on **forest cover, ecological domains, and plantation trends** worldwide.
- Understanding India's forestry data contextualizes its **environmental and economic policies**.

Key Aspects

- **Global Forest Distribution:**
 - **Europe** has the **largest share of global forest area (≈25%)**, followed by South America and North America.
 - The **boreal domain**, primarily in northern latitudes (Canada, Russia, Scandinavia), accounts for a large proportion but not the *most* extensive globally.
- **India's Standing:**
 - India ranks **fifth globally in rubber plantation area**, reflecting its strong **agroforestry diversification**.
 - Rubber cultivation is concentrated in **Kerala, Tamil Nadu, and Northeast India**.

Analysis of Statements

✓ **Statement I: Correct** – **Europe** has the **largest share (≈25%)** of global forests.

✗ **Statement II: Incorrect** – The claim that the **boreal domain dominates forest cover** is inaccurate; **tropical forest** hold the **largest ecological share**.

Conclusion → **Statement I is correct, but Statement II is incorrect.** India's **forestry and plantation sector** continues to expand sustainably within global frameworks.

31) Answer: (c) – Methane (CH₄) is not included in India's National Air Quality Index (AQI) calculation.

Explanation

Context

- The **National AQI (2014)** consolidates pollutant concentrations into an easy-to-understand index to inform public health actions and policy (administered by **CPCB / CAQM**).
- AQI uses a selected set of pollutants with direct short-term health impacts and robust ground-monitoring data.

AQI Pollutants (India)

- AQI is calculated from **eight** pollutants: **PM_{2.5}, PM₁₀, O₃ (ozone), NO₂, SO₂, CO, NH₃ (ammonia), and Pb (lead)**.

Analysis of Options

- ✓ **Methane (CH₄) – Not included.**
 - **Reason:** CH₄ is a potent greenhouse gas important for climate policy, but it is not an ambient air pollutant used for short-term health advisory indexes like AQI.
- ✗ Other listed pollutants (O₃, NH₃, Pb) are part of the AQI.

Conclusion → **Methane (CH₄)** is excluded from the AQI framework focused on immediate public-health air quality metrics.

32) Answer: (b) – To study the composition of the lunar neutral exosphere.

Explanation

Context

- **CHACE-2 (Chandra's Atmospheric Composition Explorer-2)** is a neutral mass spectrometer carried on **Chandrayaan-2's orbiter**, aimed at probing the Moon's extremely tenuous atmosphere.

Key Features

- **Objective:** Measure **neutral gas species** in the lunar exosphere across a wide mass range to detect elements/compounds (e.g., He, Ne, Ar, H₂O, OH).
- **Scientific Relevance:** Helps understand **surface-exosphere interactions, solar wind effects**, and transient phenomena (e.g., CMEs) influencing lunar atmosphere.

Analysis of Options

- ✓ **(b) Correct** — CHACE-2's primary role is **exospheric composition analysis**.
- ✗ (a), (c), (d) relate to seismic, video, or mapping tasks which are outside CHACE-2's spectrometric function.

Conclusion → CHACE-2 enhances **planetary science knowledge** and informs future lunar exploration and in-situ resource planning.

33) Answer: (c) – Croatia does not share a land border with Italy.

Explanation

Context

- Knowledge of European borders is basic geography relevant to trade, security, and diplomacy.

Key Geographic Facts

- **Italy** shares land borders with: **France, Switzerland, Austria, and Slovenia.**
- **Croatia** lies across the **Adriatic Sea** from Italy — there is **no land frontier** between Italy and Croatia.

Analysis of Options

- **✓ (c) Correct** — Croatia is separated from Italy by the **Adriatic Sea.**
- **✗** Options listing Switzerland, France, or Austria as non-neighbors are incorrect (they *do* border Italy).

Conclusion → For geopolitical and logistical considerations, remember that **Italy–Croatia** contacts are maritime, not overland.

34) Answer: (c) – Largest Sal forest in Asia.

Explanation

Context

- **Saranda Forest (Jharkhand)** is in recent policy/news focus due to proposals for sanctuary status and the need to balance conservation with tribal rights.

Key Features

- **Dominant Species: Sal (*Shorea robusta*)** — Saranda is a predominantly **Sal-dominated, moist deciduous** forest.
- **Claim to Fame:** Often described as **Asia’s largest contiguous Sal forest** — high biodiversity and significant elephant presence.
- **Socio-ecological Note:** High proportion of **indigenous tribal population**; conservation measures must integrate tribal livelihoods and rights.

Analysis of Options

- **✓ (c) Correct** — Saranda is known as the **largest Sal forest in Asia.**
- **✗** Other options (dry deciduous, bamboo, mangrove superlatives) refer to different regions (e.g., Sundarbans for mangroves; NE India for bamboo).

Conclusion → Saranda’s protection is important for **biodiversity, tribal welfare, and regional ecological stability.**

35) Answer: (b) – Statements II and III only are correct.

Explanation

Context

- The **EU–India Strategic Agenda** frames a comprehensive partnership; understanding its pillars and initiatives (like **IMEC**) is crucial for foreign policy and trade analysis.

Key Facts

- **Agenda Structure:** Comprises **five pillars** (e.g., Prosperity, Green Transition, Resilience & Security, Sustainable Development, Connectivity & Global Issues).
- **Connectivity Instruments: IMEC (India–EU Mobility and Education Cooperation/Connectivity initiatives)** and **Global Gateway** fall under **Connectivity & Global Issues.**
- **Trade Relationship:** The **EU is India’s largest trading partner in goods** (not second); bilateral goods trade reached **~€120 billion in 2024.**

Analysis of Statements

- **✗ Statement I — Incorrect:** EU is **India’s largest** goods trading partner, so the statement claiming it’s second is false.
- **✓ Statement II — Correct:** The Strategic Agenda is structured into **five key pillars.**
- **✓ Statement III — Correct:** **IMEC** (connectivity/education/mobility initiatives) is part of the **Connectivity & Global Issues** pillar.

Conclusion → Given the Agenda’s five-pillar design and IMEC’s placement, **only Statements II and III** are correct.

36) Answer: (c) – Statements I, III, and IV only are correct.

Explanation

Context

- India’s **gallantry awards** recognize **acts of exceptional courage and valor** in both **military and civilian contexts.**
- They serve as a **symbol of national gratitude** and aim to **inspire public service, patriotism, and sacrifice.**

Key Aspects

- **Policy Background:**
 - Instituted on **26 January 1950** by the **President of India.**

- The first three — **Param Vir Chakra, Maha Vir Chakra, and Vir Chakra** — were made **effective retrospectively from 15 August 1947**.
- **Ashok Chakra Series:**
 - The **Ashoka Chakra series** was renamed in **January 1967** as:
 - *Ashoka Chakra (I Class)* → **Ashoka Chakra**,
 - *Kirti Chakra (II Class)* → **Kirti Chakra**,
 - *Shaurya Chakra (III Class)* → **Shaurya Chakra**.
- **Announcement Mechanism:**
 - Awards are **announced twice a year** — on **Republic Day (26 January)** and **Independence Day (15 August)**.

Analysis of Statements

- ✓ **Statement I – Correct:** Instituted on **26 January 1950**.
- ✗ **Statement II – Incorrect:** Announced **twice** a year, not once.
- ✓ **Statement III – Correct:** Renaming of **Ashok Chakra series** took place in **January 1967**.
- ✓ **Statement IV – Correct:** First three awards effective from **15 August 1947**.

Conclusion → India's gallantry awards system reflects the **nation's recognition of bravery, discipline, and devotion to duty**, ensuring **institutional honor for valor** in peace and war.

37) Answer: (c) – Statements I and II only are correct.

Explanation

Context

- The **Kurinji (Neelakurinji)** is a **unique flowering shrub** endemic to the **Western Ghats**, symbolizing **ecological rhythm and biodiversity health**.
- Its **mass flowering cycle** is a natural indicator of environmental changes, making it ecologically significant.

Key Aspects

- **Ecological Nature:**
 - Kurinji plants **flower once in their lifetime**, and after blooming, the plants die and regenerate from seeds.
 - The **Neelakurinji (Strobilanthes kunthiana)** species flowers **once every 12 years**.
- **Habitat:**
 - Grows in **shola-grassland ecosystems** of the **Western Ghats** (Tamil Nadu, Kerala, Karnataka).
 - Not found in desert or arid zones.
- **Environmental Role:**
 - Acts as a **bioindicator** of **climate stability** and **biodiversity health**.

Analysis of Statements

- ✓ **Statement I – Correct:** Flowers **only once** in its lifetime.
- ✓ **Statement II – Correct:** Serves as a **biodiversity barometer**.
- ✗ **Statement III – Incorrect:** Found in **shola forests**, not deserts.
- ✗ **Statement IV – Incorrect:** Blooms **every 12 years**, not 5.

Conclusion → Kurinji symbolizes **biodiversity richness and ecological balance** of the Western Ghats, crucial for **conservation policies** and **climate studies**.

38) Answer: (a) – Both Statement I and Statement II are correct, and Statement II explains Statement I.

Explanation

Context

- **Coronal Mass Ejections (CMEs)** are **huge solar plasma ejections** that influence **space weather** and planetary atmospheres.
- India's **Chandrayaan-2 (CHACE-2 instrument)** observed **increased neutral atoms** in the **lunar exosphere** due to CME impacts.

Key Aspects

- **Scientific Mechanism:**
 - **CME events** release **charged particles and magnetic fields** from the Sun.
 - When these interact with the **Moon's surface**, they cause **sputtering**—atoms are knocked off the surface, increasing **neutral atom density**.
- **Empirical Observation:**
 - **CHACE-2** confirmed a **rise in exospheric neutral atoms**, particularly on the **dayside**, during CME impact periods.
- **Scientific Significance:**
 - Enhances understanding of **space weather, lunar surface chemistry, and solar-lunar interactions**.
 - Helps design **protective measures** for spacecraft and astronauts.

Analysis of Statements

- ✓ **Statement I – Correct:** CME strikes increase lunar neutral atom density.
- ✓ **Statement II – Correct:** CMEs are solar plasma eruptions; they explain Statement I.

Conclusion → **CHACE-2 findings** strengthen India's contribution to **space weather science**, confirming that **CME events directly affect the lunar exosphere**.

39) Answer: (c) – Statement I is correct, but Statement II is incorrect.

Explanation

Context

- The **Real Effective Exchange Rate (REER)** is a vital macroeconomic indicator used by central banks and economists to assess a currency's **external competitiveness**.

Key Aspects

- **Definition:**
 - REER measures the **value of a currency against a weighted basket of trading partner currencies**, adjusted for **inflation differentials**.
- **Formula:**
 - $REER = NEER \times (\text{Domestic Price Index} / \text{Foreign Price Index})$
 - Where **NEER (Nominal Effective Exchange Rate)** is the unadjusted currency value index.
- **Interpretation:**
 - **High REER:** Currency overvalued → Exports less competitive, imports cheaper.
 - **Low REER:** Currency undervalued → Exports competitive, imports costlier.

Analysis of Statements

- ✓ **Statement I – Correct:** A higher REER reduces export competitiveness and increases import attractiveness.
- ✗ **Statement II – Incorrect:** REER is **not measured only against the US dollar**; it uses a **weighted trade partner basket** and adjusts for **relative inflation**.

Conclusion → REER provides a **composite measure of external competitiveness**, guiding **monetary and trade policy** decisions.

40) Answer: (a) – Both Statement I and Statement II are correct, and Statement II explains Statement I.

Explanation

Context

- The **U.S.–Australia Critical Minerals Framework (2024)** reflects growing concerns over **China's monopoly on rare earth and strategic minerals** crucial for clean energy, EVs, and defense manufacturing.

Key Aspects

- **Objective:**
 - To **diversify critical mineral supply chains** and ensure **secure, sustainable access** for allied economies.
- **Strategic Drivers:**
 - **China's dominance (85–95%)** in global **rare earth mining, refining, and export** markets has created **geopolitical dependence** and **price manipulation risks**.
- **Implementation:**
 - The framework supports **joint projects, funding mechanisms, and price stability initiatives** between the U.S. and Australia.

Analysis of Statements

- ✓ **Statement I – Correct:** The U.S.–Australia framework aims to counter **China's critical minerals dominance** and diversify supply sources.
- ✓ **Statement II – Correct:** China's **control of 85–95%** of rare earth output drives the formation of such frameworks; hence it **explains Statement I**.

Conclusion → The **Critical Minerals Framework** underlines the **strategic geopolitics of resources**, shaping **energy security** and **technological resilience** in a multipolar world.